Remarks

In response to the Office Action dated August 13, 2004, claim 10 has been amended to properly depend from claim 8, and the term "the display" in claim 27 has been amended to read "a display." These amendments have been made in response to the Examiners rejection under 35 U.S.C. § 112, 2nd paragraph. Neither claim has been narrowed.

Applicants note the Examiner's objection to the inventors' declaration. Although applicants believe that the original declaration is sufficient, we are in the process of obtaining newly executed declarations and will file them when received.

In the Office Action, claims 1-33 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,872,909 to Wilner et al. ("Wilner et al.") in view of U.S. Patent No. 5,806,062 to Chen et al. ("Chen et al.").

Claims 1-33 remain pending in this application. In view of the amendments and the following remarks, Applicants respectfully request withdrawal of the rejections.

In support of his rejection, the Examiner alleges that Wilner et al teaches all of the limitations of claim1, except for the claimed "the graph having a plurality of nodes and at least one line, each node being associated with a corresponding object, each line connecting two of the nodes and representing an interaction between the respective objects associated with the two nodes." We agree.

The Examiner further asserts that Chen teaches this limitation at col. 12, lines 31-67, and that "[t]he modification would be obvious because one of ordinary skill in the art would be motivated to display relationships between objects (Chen, column 12, lines 4-27)." We respectfully disagree with both of these assertions.

Wilner et al provides a "Logic Analyzer for Software" which "logs events that occur in target software and displays status information in a time-line fashion with specific icons indicating events and status changes to show task interaction over time." Specification, page 1.

In contrast, Chen et al. is directed to a data analysis system using a virtual database. The Examiner points to Figure 14 and its associated description as providing a graph with plural nodes connected by lines. As explained in column 12, lines 30 et seq., however, the information in Figure 14 represents information in a virtual database (VDB 318), not object interaction data logged from a target as claimed.

Figure 14 shows a solid line between "Main" and "pointer" (indicating a "same" relationship), a dotted line between "Main" and "max" (indicating a "deleted" relationship), and dashed lines between Main and "min", "v", and "end" (indicating a "added" relationship). The meaning of these "relationships" is explained in column 11, lines 4 through 30:

> The entries in the relationship section 1104 of VDB 312 contain information indicating the status of relationships. For example, line 1114 contains information on the relationship between the entity "main" and the entity "MAX". In C program version one 302, the entity MAX was present in the main function at line 7 (FIG. 4). Thus, in C program version one 302 there was a relationship between main and MAX, as indicated in VDB 308 at line 720 (FIG. 7), as discussed above. However, in C program version two 304, MAX is not present in the function main. Therefore, there is no entry in the relationship section of VDB 310 (FIG. 8) corresponding to line 720 in VDB 308. As a result, line 1114 of VDB 314 indicates that this relationship has been deleted with a "d" in the tag field 1118 of line 1114. Line 1116 contains information on the relationship between the entity v and the entity MAX. In C program version one 302 the variable v was defined in line 2 (FIG. 4) without reference to the entity MAX. Thus, there is no relationship between the two entities in C program version one 302. In C program version two 304 v is initialized to MAX in line 3 (FIG. 5), which results in a relationship between v and MAX. This added relationship is indicated by an "a" in the tag field 1120 of line 1116 in VDB 314. The information contained in the remaining lines of VDB 314 would be clear to one skilled in the art based on the above description.
>
> At this point in the processing VDB 314 contains the difference information for the two versions of the C programs. However, a user may not be interested in all the difference information. Assume for purposes of this example that a user is only interested in the relationships between the function main and any other entity. In this case, a query operator could be used to filter out unwanted information and create a virtual database with only the desired information. Thus, filter operator 316 takes as input VDB 314 and creates as output VDB 318, which only contains the wanted information.

VDB 318, in turn, is displayed in Figure 14. As such, in Figure 14, the solid line between Main and pointer indicates that both main and pointer are found in both C Program Version 1 302 and in C Program Version 2 304, the dotted line between Main and Max indicates that main and Max are C Program Version 1 302 but not in C Program Version 2 304, and so on. It does not represent an "interaction between the respective objects associated with the two nodes". Rather, it represents a comparison between the text of two versions of a computer program, as represented in virtual database VDB 318.

Applicants respectively submit that it would not have been obvious to a person of ordinary skill at the time of the invention – and without the benefit of hindsight – to select features of Chen et al. and Wilner et al. and combine them as suggested by the Examiner to arrive at the claimed invention.

There is no suggestion to be found within the references themselves for a motivation to combine those features. As admitted, Wilner et al. does not disclose displaying object interaction data as a graph "having a plurality of nodes and at least one line, each node being associated with a corresponding object, each line connecting two of the nodes and representing an interaction between the respective objects associated with the two nodes." Nor, Applicants submit, is there any suggestion within Wilner et al. for a need or desire for such a display.

On the contrary, Wilner et al. displays the *timing* of multiple event actions that are occurring simultaneously on separate lines along a common *time line* in a single display. See column 6, lines 66-column 7, line 1, and Figs. 2 and 9. Though Wilner et al. describes a significant improvement in the technology of target environment software debugging, it neither recognizes nor suggests any need to the claimed graphical representation, which is concerned not with *when* objects such as tasks or semaphores execute, but rather, is concerned with *whether* different objects *interact with eachother*.

Nor does Chen et al. provides any motivation to combine. Chen et al. relates to a virtual database system, a subject unrelated to the topic of target environment debugging disclosed in Wilner et al. Furthermore, there is no suggestion that the graph of Chen et al, which was used to

indicate differences between two versions of a computer program, should be applied to object interactions on a target as claimed. It is therefore respectfully submitted that the combination of Wilner et al and Chen et al cannot render obvious claim 1.

As claims 12, 27, and 31 similarly require a "graph having a plurality of nodes and at least one line, each node being associated with a corresponding object, each line connecting two of the nodes and representing an interaction between the respective objects associated with the two nodes, " the combination of Wilner et al and Chen et al similarly fails to render obvious these claims as well.

Withdrawal of the rejections to claim 1, 12, 27, and 31 is therefore respectfully requested. As all of the remaining claims depend from one of these claims, withdrawal of the Examiner's rejection of claims 2-11, 13-26, 28-30, and 32-33, is also requested.

CONCLUSION

For at least the reasons stated above, Applicant requests withdrawal of the rejections to the pending claims. It is respectfully submitted that the application is now in condition for allowance.

Respectfully submitted,

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